REMARKS/ARGUMENTS

Claims 1-20 are pending. Claims 2-7, 12, 13, and 15-18 have been amended. No new matter has been introduced. Applicant believes the claims comply with 35 U.S.C. § 112.

Applicant notes with appreciation the indicated allowability of claims 4-10, 15-18, and 20 if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The claims have not been rewritten at this time because Applicant believes the claims as amended are patentable.

<u>Response to Examiner's Response to Applicant Counsel's Remarks</u>

The Examiner states: "The R1 (50a) and R2 (50b) are secondary volumes in comparison to the primary volumes (22a and 22b) in the primary data storage system, which indicated that 50a and 50b are provided for a primary volume (22a) in the primary data storage system." Applicant respectfully submits that this contradicts the disclosure of Ofek et al.

For example, Ofek et al. at column 7, line 21-26 clearly discloses "a primary data storage device 50a which is primary with respect to the attached storage controller 44 and host 52 in the case of the secondary data storage system 46" and a "primary storage device 22a which is primary with respect to the first or primary host 12 in the case of the primary data storage system 14." Ofek et al. at column 7, lines 27-34 discloses "a secondary storage volume 50b which serves as the secondary storage for the primary data stored on the primary volume 22a of the primary data storage system 14" and "a secondary storage volume 22b which stores primary data received and copied from the secondary site" which is storage system 46 having the primary data storage device 50a.

In other words, as seen in Fig. 1, the secondary storage volume 50b in the secondary storage system 46 serves as the secondary storage for the primary data stored on the primary volume 22a of the primary data storage system 14, while the secondary storage volume 22b in the primary storage system 14 serves as the secondary storage for the primary data stored on the primary volume 50a of the secondary data storage system 46.

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Therefore, Ofek et al. does not disclose a secondary mirror volume (S-VOL) group including multiple S-VOLs created as mirror images of said primary volume, and an S-VOL restoring unit configured to restore the data of a first S-VOL belonging to the S-VOL group with the data of a second S-VOL belonging to the S-VOL group depending on the type of an error that happens in the first S-VOL.

Claims 1-3 and 11-14

Claims 1-3 and 11-14 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Ofek et al. (US 5,889,935).

Applicant respectfully submits that independent claim 1 as amended is novel and patentable over Ofek et al. because, for instance, Ofek et al. does not teach or suggest a secondary mirror volume (S-VOL) group including multiple S-VOLs created as mirror images of said primary volume, and an S-VOL restoring unit configured to restore the data of a first S-VOL belonging to the S-VOL group with the data of a second S-VOL belonging to the S-VOL group depending on the type of an error that happens in the first S-VOL.

Ofek et al. discloses a mirroring system between storage systems, wherein a primary volume 22a (R1-VOL) and a secondary volume 50b (R2-VOL) form a pair, and data that is written into the R1-VOL is also written into the R2-VOL. If a failure occurs in the R1-VOL, the R1-VOL is restored using the data stored in the R2-VOL.

In the present invention as claimed, a plurality of secondary volumes (S-VOLs) are provided for one primary volume (P-VOL) and grouped together. If a failure occurs in an S-VOL, the failed S-VOL is restored using data stored in another S-VOL belonging to the same group as the failed S-VOL. In this way, it is possible to secure the availability of an S-VOL.

The Examiner states that the restoration between the R1-VOL and R2-VOL in Ofek et al. corresponds to the restoration between S-VOLs by an S-VOL restoring unit in the present invention. In Ofek et al., however, the R1-VOL and R2-VOL form a pair and there is no disclosure that a plurality of R2-VOLs grouped together are provided for the R1-VOL. Furthermore, Ofek et al. does not disclose that if a failure occurs in an R2-VOL, the failed R2-VOL is restored using data stored in another R2-VOL belonging to the same group as the

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R2-VOL. In short, Ofek et al. does **not** teach or suggest an S-VOL restoring unit that restores data between S-VOLs grouped together, such that if a failure occurs in an S-VOL, the failed S-VOL is restored using another S-VOL belonging to the same group as the failed S-VOL.

For at least the foregoing reasons, claim 1, and claims 2-11 depending therefrom, are novel and patentable over Ofek et al.

Applicant respectfully submits that independent claim 12 as amended is novel and patentable over Ofek et al. because, for instance, Ofek et al. does not teach or suggest a secondary mirror volume (S-VOL) group including multiple S-VOLs created as mirror images of said primary volume, and restoring the data of a first S-VOL belonging to the S-VOL group with the data of a second S-VOL belonging to the S-VOL group depending on the type of an error that happens in the first S-VOL.

As discussed above, Ofek et al. discloses that the R1-VOL and R2-VOL form a pair and fails to teach that a plurality of R2-VOLs grouped together are provided for the R1-VOL. Furthermore, it is not disclosed that if a failure occurs in an R2-VOL, the failed R2-VOL is restored using data stored in another R2-VOL belonging to the same group as the R2-VOL. Thus, Ofek et al. does **not** teach or suggest restoring data between S-VOLs grouped together, such that if a failure occurs in an S-VOL, the failed S-VOL is restored using another S-VOL belonging to the same group as the failed S-VOL.

For at least the foregoing reasons, claim 12 and claims 13-20 depending therefrom are novel and patentable over Ofek et al.

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CONCLUSION

In view of the foregoing, Applicant believes all claims now pending in this Application are in condition for allowance and an action to that end is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,

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